

FACTORING WORKSHEET/REVIEW

FACTOR COMPLETELY.

1. $60d^3 + 55d^2 - 75d$

$\frac{180}{9 \ 20} \quad 5d(12d^2 + 11d - 15d)$
 $\boxed{5d(3d + 5)(4d - 3)}$

3. $(p^2 - 8)(p + 1) - (p + 1)$

$(p+1)[(p^2-8)-1]$
 $(p+1)(p^2-9)$
 $\boxed{(p+1)(p-3)(p+3)}$

5. $(x^3 + y^3) + (x^2 - y^2)$

$(x+y)(x^2-xy+y^2) + (x-y)(x+y)$
 $\boxed{(x+y)(x^2-xy+y^2+x-y)}$

7. $(x+5)^3 - 8$

$[(x+5)-2][(x+5)^2+2(x+5)+4]$
 $\boxed{(x+3)(x^2+10x+25+2x+10+4)}$
 $\boxed{(x+3)(x^2+12x+39)}$

9. $6(2x-3)^5 - 23(2x-3)^4 + 21(2x-3)^3$

$(2x-3)^3 [6(2x-3)^2 - 23(2x-3) + 21]$
 $(2x-3)^3 [2(2x-3) - 3][3(2x-3) - 7]$
 $(2x-3)^3 (4x-6-3)(6x-9-7)$
 $(2x-3)^3 (4x-9)(6x-16)$
 $\boxed{2(2x-3)^3(4x-9)(3x-8)}$

11. $(x^2 + 2x + 7)^2 - (x^2 + 3x - 5)^2$

$(x^2+2x+7-x^2-3x+5)(x^2+2x+7+x^2+3x-5)$
 $(-x+12)(2x^2+5x+2)$
 $\boxed{-(x-12)(2x+1)(x+2)}$

13. $18y + 25x^2 - y^2 - 81$

$-y^2 + 18y - 81 + 25x^2$
 $-[(y^2 - 18y + 81) - 25x^2]$
 $-[(y-9)^2 - 25x^2]$
 $-(y-9-5x)(y-9+5x)$

2. $x(x-y)^2 - 9x$

$x[(x-y)^2 - 9]$
 $x[(x-y)-3][(x-y)+3]$
 $\boxed{x(x-y-3)(x-y+3)}$

4. $4x^{-3}(x^{-2}-3)^{-5} - 2x^{-1}(x^{-2}-3)^{-3} + 3x(x^{-2}-3)^{-4}$

$x^{-3}(x-3)^{-5}(3x^5-11x^4+12x^3-18x^2+4)$
 see attached

6. $5a^3 + 2a^2 - 45a - 18$

$a^2(5a+2) - 9(5a+2)$
 $(5a+2)(a^2-9)$
 $\boxed{(5a+2)(a-3)(a+3)}$

8. $(9x^2 + 6xy + y^2) - (3xz - yz)$

$(3x+y)^2 - z(3x+y)$
 $(3x+y)[(3x+y)-z]$
 $\boxed{(3x+y)(3x+y-z)}$

10. $a^2c^2 - 4a^2 - b^2c^2 + 4b^2$

$\frac{126}{9 \ 14} \quad a^2c^2 - b^2c^2 - 4a^2 + 4b^2$
 $c^2(a^2 - b^2) - 4(a^2 - b^2)$
 $c^2(a-b)(a+b) - 4(a-b)(a+b)$
 $(a-b)(a+b)(c^2-4)$
 $\boxed{(a-b)(a+b)(c-2)(c+2)}$

12. $9(5x+3)^2 - 24(5x+3) + 16$

$[3(5x+3)-4]^2$
 $(15x+9-4)^2$
 $(15x+5)^2$
 $\boxed{25(3x+1)^2}$

14. $3x^4 + 18x^2y^2 + 75y^4$

$3(x^4 + 6x^2y^2 + 25y^4)$
 $3(x^4 + 10x^2y^2 + 25y^4 - 4x^2y^2)$
 $3[(x^2+5y^2)^2 - 4x^2y^2]$
 $\boxed{3(x^2+5y^2-2xy)(x^2+5y^2+2xy)}$

$$\textcircled{4} \quad 4x^{-3}(x-3)^{-5} - 2x^{-1}(x-3)^{-3} + 3x(x-3)^{-4}$$

$$4x^{-3}a^{-5} - 2x^{-1}a^{-3} + 3xa^{-4}$$

$$x^{-3}a^{-5}(4 - 2x^2a^2 + 3x^4a)$$

$$x^{-3}(x-3)^{-5}[4 - 2x^2(x-3)^2 + 3x^4(x-3)]$$

$$x^{-3}(x-3)^{-5}(4 - 2x^2(x^2 - 6x + 9) + 3x^5 - 9x^4)$$

$$x^{-3}(x-3)^{-5}(4 - 2x^4 + 12x^3 - 18x^2 + 3x^5 - 9x^4)$$

$$\boxed{x^{-3}(x-3)^{-5}(3x^5 - 11x^4 + 12x^3 - 18x^2 + 4)}$$